UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/855,148	05/14/2001	Takeshi Sasaki	NEC 142491	1115

7590 08/23/2005

Norman P. Soloway
HAYES, SOLOWAY, HENNESSEY,
GROSSMAN & HAGE, P.C.
175 Canal Street
Manchester, NH 03101

EXAMINER	
DUONG, THOI V	
ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 08/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/855,148	SASAKI, TAKESHI	
	Examiner	Art Unit	
	Thoi V. Duong	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 May 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-4 and 6-9* ~~is~~/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-4 and 6-9* ~~is~~/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to the Amendment filed May 31, 2005.

Accordingly, claims 2 and 7-9 were amended, and claims 1 and 5 were cancelled. Currently, claims 2-4 and 6-9 are pending in this application.

Applicant further filed a verified English Translation of the priority application to overcome Niiya et al. (USPN 6,674,503 B2). However, upon further consideration, a new ground of rejection is made as followed.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 2, 4 and 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Prior Art in view of Takanashi et al. (Takanashi, USPN 5,231,527).

As shown in Figs. 1A, 1B, 1C, and 2, Applicant's Prior Art discloses a fabrication method of a liquid crystal display (LCD) panel 20, comprising the steps of:

forming a deformable seal member 4 containing second spacers 5 on a TFT transparent substrate 1 such that said seal member surrounds a display area of said liquid crystal display panel;

arranging first spacers 16 on said display area on the TFT substrate;

dropping liquid crystal 3 onto an area surrounded by said seal member on the TFT substrate;

forming a panel by sticking a color-filter transparent substrate 2 on the TFT substrate with said seal member in a vacuum chamber;

putting said panel under atmospheric pressure to deform said first spacers through a deformation of said panel due to a difference between said atmosphere pressure and a negative pressure inside said panel (Specification, paragraph 13); and

hardening said seal member after an inner volume of said panel becomes equal to a volume of said liquid crystal (Specification, paragraph 21),

wherein at least one of said first spacers is elastically deformed from an initial size thereof at the center portion of the panel before a gap at the seal member is deformable as shown in Fig. 1B.

Applicant's Prior Art discloses a fabrication method of a LCD panel that is basically the same as that recited in claims 2, 4 and 6-9 except that the initial size of the first spacer in a cell gap direction is not larger than an appropriate cell gap of the LCD panel, wherein a relative value of an initial average size of the first spacers to the appropriate cell gap is within a range of 102.9% to 107.0%.

As shown in Figs. 1 and 2, Takanashi discloses a LCD panel in which spacers 5 have an initial average size 6.0 micrometer (mean particle diameter) and a standard deviation of particle diameter of 0.4 micrometer to produce an appropriate cell gap which varies only to a small extend (from 5.95 to 6.03 micrometer) around 6.00 micrometer (col. 3, lines 35-57, col. 5, lines 63-68 and col. 6, lines 39-50). Accordingly, if the spacers are 6.2-6.4 micrometer in diameter and the cell gap is 6 micrometer, a

relative value of an initial average size of the spacers 4 to the appropriate cell gap is 103.3%-106.7%.

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the Applicant's Prior Art with the teaching of Takanashi by using first spacers having a relative value of an initial average size to the appropriate cell gap of 103.3%-106.7% to realize a uniform display quality by reducing cell gap deviation (col. 1, lines 18-12).

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Prior Art in view of Takanashi et al. (Takanashi, USPN 5,231,527) as applied to claims 2, 4 and 6-9 above, and further in view of Hiraichi et al. (Hiraichi, USPN 6,204,907 B1)

Applicant's Prior Art as modified in view of Takanashi above includes all that is recited in claim 3 except for the material of the second spacer which is hardly deformed under atmospheric pressure. Hiraishi discloses, as shown in Fig. 2, a LCD device comprising first spacers 7 which are plastic beads and second spacers which are glass beads disposed in a seal 14 to maintain the gap between a TFT substrate 10 and an opposite substrate 20 and to prevent the problem of inappropriate display in a neighborhood display of the seal 14 (col. 10, lines 16-22).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the Applicant's Prior art with the teaching of Hiraishi by having second spacers formed of a material such as glass beads, which is hardly deformed when it is pinched between the substrates under atmospheric pressure

so as to obtain a good linearity in the sealing edge and a uniform cell gap for the display (col. 10, lines 16-22).

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thoi V. Duong whose telephone number is (571) 272-2292. The examiner can normally be reached on Monday-Friday from 8:30 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached at (571) 272-2293.

Thoi Duong

08/09/2005

ROBERT KIM
SUPERVISORY PATENT EXAMINER